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# ILLINOIS STATE GEOLOGICAL SURVEY

NATURAL RESOURCES BUILDING  
URBANA, ILLINOIS

JOHN C. FRYE, CHIEF

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## GEOLOGIC REPORT ON GROUND-WATER CONDITIONS FOR MUNICIPAL SUPPLY FOR MAPLETON, SECTION 20, T. 7 N., R. 7 E., PEORIA COUNTY, ILLINOIS

By

Robert E. Bergstrom, Geologist and Head  
Section of Ground Water Geology and Geophysical Exploration

This report, prepared for Mr. Dwain Wallace, Wallace Engineering Company, 1402 West Fredonia Avenue, Peoria, Illinois, summarizes the ground-water geology in the vicinity of Mapleton, Peoria County, relative to the availability of a water supply for the Village.

Mapleton is situated at the foot of the north bluff of the Illinois River, at elevations ranging from about 460 to 550 feet above sea level. The Toledo, Peoria and Western railroad track and U. S. Highway 24 skirt the Village on the south. Between the Village and the river the flood plain is about three quarters of a mile wide. The elevation of the flood plain is between 445 and 460 feet above sea level. The upland above the Village to the north rises above an elevation of 610 feet above sea level.

Ground-water conditions on the upland north of the Village are similar to those at Glasford, which has a well completed in the St. Peter Sandstone at a depth of 1685 feet. The driller's log of this well suggests that the Pennsylvanian rocks extend to a depth of 470 feet, the Keokuk-Burlington Limestones to 650 feet, the Kinderhook Shale to 830 feet, the Devonian and Silurian limestone and dolomite to 1130 feet, the Maquoketa Shale to 1350 feet, and the Galena-Platteville Dolomites to 1630 feet.

The Pennsylvanian rocks have low permeability, and the limestones and dolomite between the Pennsylvanian and St. Peter rocks contain water that is highly mineralized.

The river deposits beneath the flood plain south of Mapleton thicken from less than 10 feet thick along Highway 24 to 65 to 80 feet thick along the river's edge. Water-bearing sand and gravel of varying thicknesses and permeabilities occur within the river deposits. The river deposits are underlain by Pennsylvanian bedrock.

Considerable testing of the flood plain has been conducted by the T., P., and W. Railroad in Sections 28, 29, and 30. The locations of selected holes are shown on the attached map. A summary of the results obtained from these test holes follows:

EPA Region 5 Records Ctr.



384020

No.	Thickness Alluvium (ft.)	Bedrock Elevation	Depth, Sand and gravel
Mapleton T.H.			
#20	21	451	5 to 21
#15	7	451	4 to 7
#14	16	431	2 to 16
#17	21	431	2 to 21 (clay sand, gravel)
#13	14	440	--
# 4	13	429	--
# 1	22	424	14 to 22
#29	30	421	12 to 23
#28	52 +	below 400	25 to 52
#22	45 +	below 400	15 to 40
#25	31	409	6 to 31
	76	366	61 to 76

The tests in the NE 1/4 of Section 29 (Mapleton T.H. 13, 14, and 17) and T.H.'s 15 and 20 all appear to have been unfavorable; generally the alluvium was found to be too thin and too tight. The deposits are thicker and generally contain thicker water-yielding sand and gravel south of the line shown as the 425-foot bedrock contour. Test holes 1, 4, and 22 penetrated more than 20 feet of alluvium, most of it sand and gravel of fair to good permeability. At sites 28 and 29 the deposits are more than 45 feet thick and contain permeable sands and gravels.

South of the lake bed the sands and gravels range from 10 to more than 30 feet thick. The thickest deposits are east of T.H. 25.

With respect to possible sites for testing for the Village, we recommend not drilling north of the spur tracks in Section 29 because the alluvium is so thin. The most favorable area is an area from T.H. 1 on the west through the land south of the lake bed up to T.H. 22 on the east.

Please furnish the State Geological Survey the following information on any new well or test holes drilled: location; a driller's log recording all formations encountered in drilling; screen, cementing, and casing records; appearance of water and static level, etc. Sample cuttings from any drilling should be saved at regular five foot intervals and shipped via truck or railway freight collect to the State Geological Survey, Urbana (small amounts may be sent parcel post); be sure all samples are clearly labeled and well location, owner's and driller's names included in package. Sample sacks and log books will be furnished by the Geological Survey on request.